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## USEFUL RECEIPTS.

**Alum Made in the Manufacture of Candles.**

We learn by the "Comptes Rendus," that J. Cambaceres, has endeavored to get a useful product in the manufacture of fatty acids into candles. Tallow in the manufacture of stearic candles, is saponified with lime, then the lime is separated from the fatty matter by sulphuric acid, which combines with the lime, forming the sulphate of lime, and setting the fatty stearic acid free, thereby fitting it for bleaching, and being made into beautiful sperm-like candles. Instead of using lime to saponify the tallow, M. Cambasceres employs soda or potash ley, and adds clay. The soap containing an excess of the alkali acts upon the clay so as to dissolve the alumina in it which combines with the fatty matter forming an insoluble aluminous soap. By the addition of sulphuric acid to this, the fatty matters are set free, and the product is the sulphate of lime, and when clay can be found, free from iron, and near a candle-factory, this process is worth a trial by some of our spirited candle makers.

**Rancid Butter.**

The "Echo du Monde Savant" says:—A farmer in the vicinity of Brussels having succeeded in removing the bad smell and taste of some butter by mixing it with chloride of lime, he was encouraged by this experiment, and he has restored to butter the taste and odor of which were insupportable, all the sweetness of fresh butter. This operation is extremely simple and practicable by all. It consists simply in working the butter in a sufficient quantity of water, in which from 25 to 30 drops of chloride of lime have been added to every two pounds of butter. After having mixed it till all its parts are in contact with the water, it may be left in it for an hour or two, afterwards withdrawn and worked again in clear water. The chloride of lime having nothing injurious in it, can with [illegible] mented; but after having var[illegible] ment, it was found that from twenty-five to thirty drops to every two [illegible] of butter were sufficient.

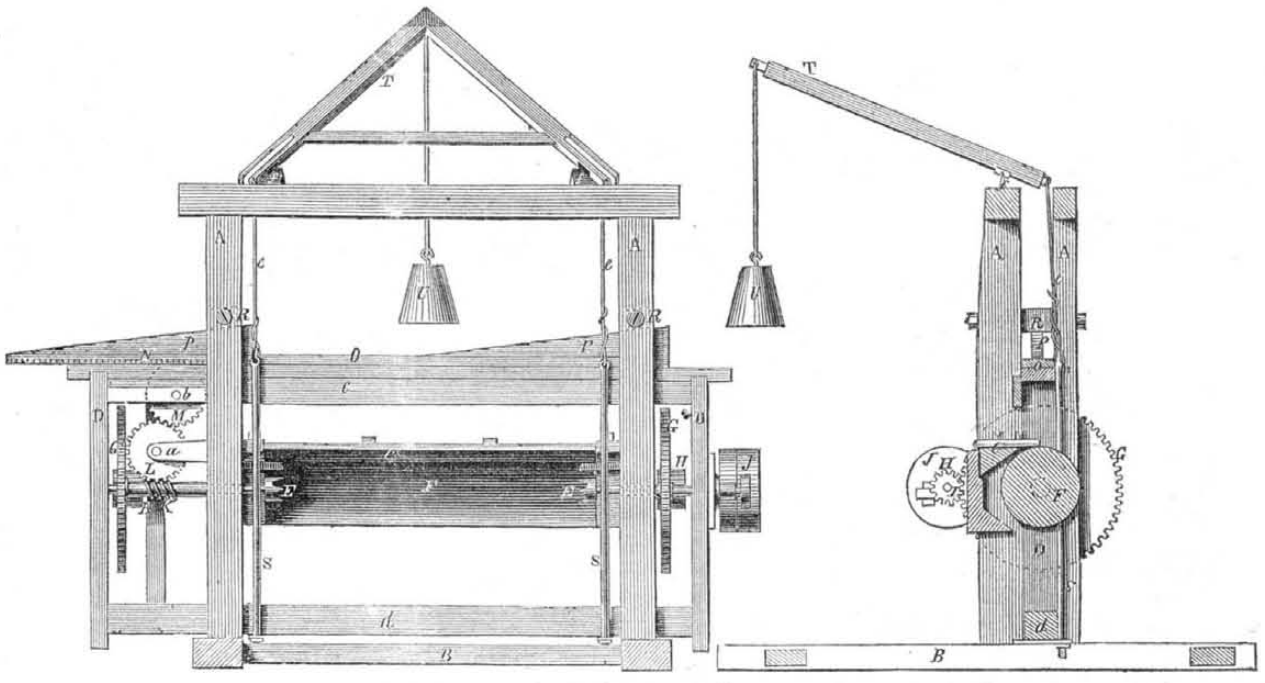
Another method of restoring sweetness and flavor to rancid butter, said to be very effectual by those who have tried it, is to put it into a churn with new milk and work it till all the old salt and rancidity is removed, after which it is to be taken from the churn, worked and salted afresh.

[The above should be tried on a small scale first.

To multiply any number less than 100 by 11—add the two figures composing the number together, place the sum between the same two figures, if this sum be less than 10; if 10 or more than 10, add 1 to the left hand figure, and place the unit between the two figures so taken. Example:—44×11=484: the two fours being added make 8, which is the second figure. Thus multiplying by 11 may be as readily performed in the mind, when the multiplicand is less than 100, as multiplying by 10.

## MACHINE FOR CUTTING VENEERS.

Figure 1. Figure 2.



The annexed engravings are a front elevation (fig. 1), and a transverse vertical section (fig. 2) of an improved machine for cutting veneerings, invented by Peregrine White of Jackson, Waldo Co., Me., who has taken measures to secure a patent for it. The same letters refer to like parts on both figures.

The invention relates to the cutting of veneers, in the form of volutes, from solid logs of wood; the log is fed to the knife in a peculiar manner to accomplish the object.

A A are the four posts of the machine; B is the sill or base beam; C is a horizontal knife, permanently secured between the two back posts, A A. D is another frame, the cross top beam, *c*, being between the front and back post, A. This frame sustains the revolving centres, E, E, which holds the log, F, between them. The spindles of these centres have toothed wheels, G G, which mesh into pinions, H H, on shaft I, as shown in fig. 2. J is the driving pulley at one end of shaft I. One spindle of the left centre, E, has a screw K on it, which meshes into a worm wheel, L, which has its axis in a suspended bearing, *a* attached to frame, D; this wheel, L, meshes into pinion M, which has its axis at *b*, in beam *c*. The pinion, M, works the rack, N, on the under side of slide O, which is placed between the posts, A A, and rests on beam *c*. P P are two inclined planes on the upper surface of slide, O. These inclines bear against blocks, R R, which are secured between the front and back posts, A.

S S are rods, the lower ends of which are secured to the bar, *b*. The upper ends of these rods are attached to the lower ends of the angular frame, T, by the connections, *e e*. This angular frame, T, rests upon points, *f f*, on the cross-piece, *g*, of posts, A. U is a weight suspended from the apex of T.

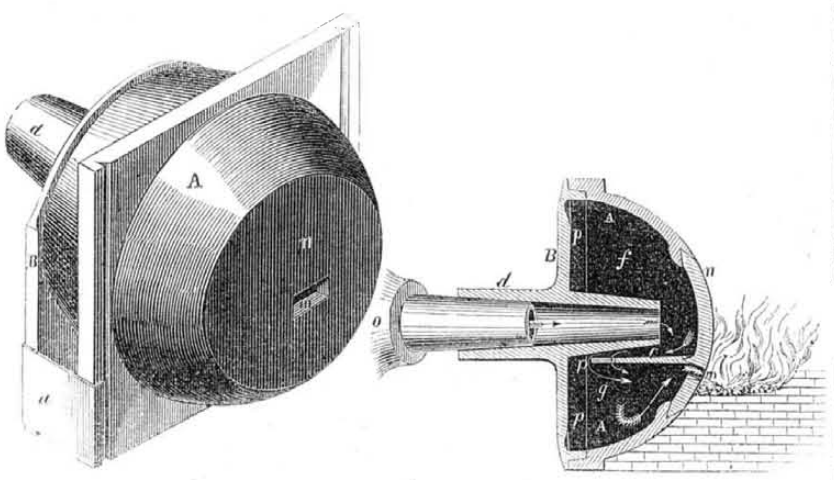
Operation—Motion being applied to the driving pulley, J, the pinions, H, communicate motion to the wheels, G G, and the revolving centres, E E, which rotate the log, F, secured between them. As the log rotates, it acts against the stationary knife, C, which cuts the veneers from the same. The screw, K, by turning the wheel, L, and its moving pinion, M, drives the rack, N, of the inclined slides, O, which are moved along from the highest part to the bottom of the inclines, pressing against the stops, R R, as the log is being cut from its greatest circumference into the veneerings. By this action, as the weight, U, on the triangular frame, exerts a great lifting power on frame, D, through the rods, S S, the said frame is gradually slid upwards as the log is being cut, thus bringing the centres, E E, upwards closer and closer to the knife, C, as the log is cut, the screw, K, graduating the approach of the centres to the knife. Thus it will be seen that the log will be cut in the form of a thin volute for veneering, the thickness of which will depend upon the thread of screw, K, and the fineness of the gearing connected with it to move the inclined slides faster or slower to allow the centres, E, to be elevated by the weight, U. This can be regulated as desired.

This machine for cutting veneers is very simple, and the manner of feeding the log to the knife is very ingenuous indeed.

More information may be obtained by letter addressed to the inventor.

## GIDEON DAVIS'S NEW TUYERE.

Figure 1. Figure 2.



A new tuyere iron has been invented by Gideon Davis, of Loydsville, Ohio, which is represented in the annexed engraving. An important result is attained in the construction of this tuyere namely the supply of a constant blast of cool air upon the portion of the tuyere adjoining the fire, and at the same time a blast of hot air upon the coal; the manner in which this is accomplished will be readily understood by the accompanying description and engravings, in which fig. 1 is a perspective view, and figure 2 a vertical longitudinal section through the centre, showing its application to a smith's forge, and also its connection with a bellows. A is a hemispherical cast-iron chamber, with a movable front plate, B, secured to it by couplings, in the flanges, *p*, or in any other convenient manner, having the tapering pipe, *d*, cast within its centre, and extending within the chamber, nearly to the plate, *n*, and without the plate for the reception of the blast-pipe of the bellows, A, a division plate, C, extends longitudinally across the chamber immediately above the opening, *m* and fills the chamber nearly to the front plate, B. The cool atmospheric air from the bellows, in the first place, strikes with considerable force upon the hottest portion of the fire-plate, *n*, made of cast-iron, plumbago, or other suitable material, and after being forced upon this plate immediately fills the part of the chamber, *f*, and taking the direction of the arrows, passes to the lower chamber, *g*, from whence it is expelled through the opening or fire-pipe, *m*, upon the coal of the furnace. The opening, *m*, is inclined to a horizontal line, and the air meets the coal by being driven at an inclination downward, instead of striking it horizontally. The advantages of Mr. Davis's tuyere are, that the air from the bellows becomes heated by absorbing the caloric from the fire plate, *n*, thus a two-fold advantage is gained—first keeping the plate from being over-heated, and consequently destroyed, and at the same time furnishing a hot blast to be forced upon the coal. Measures are taken to secure a patent.

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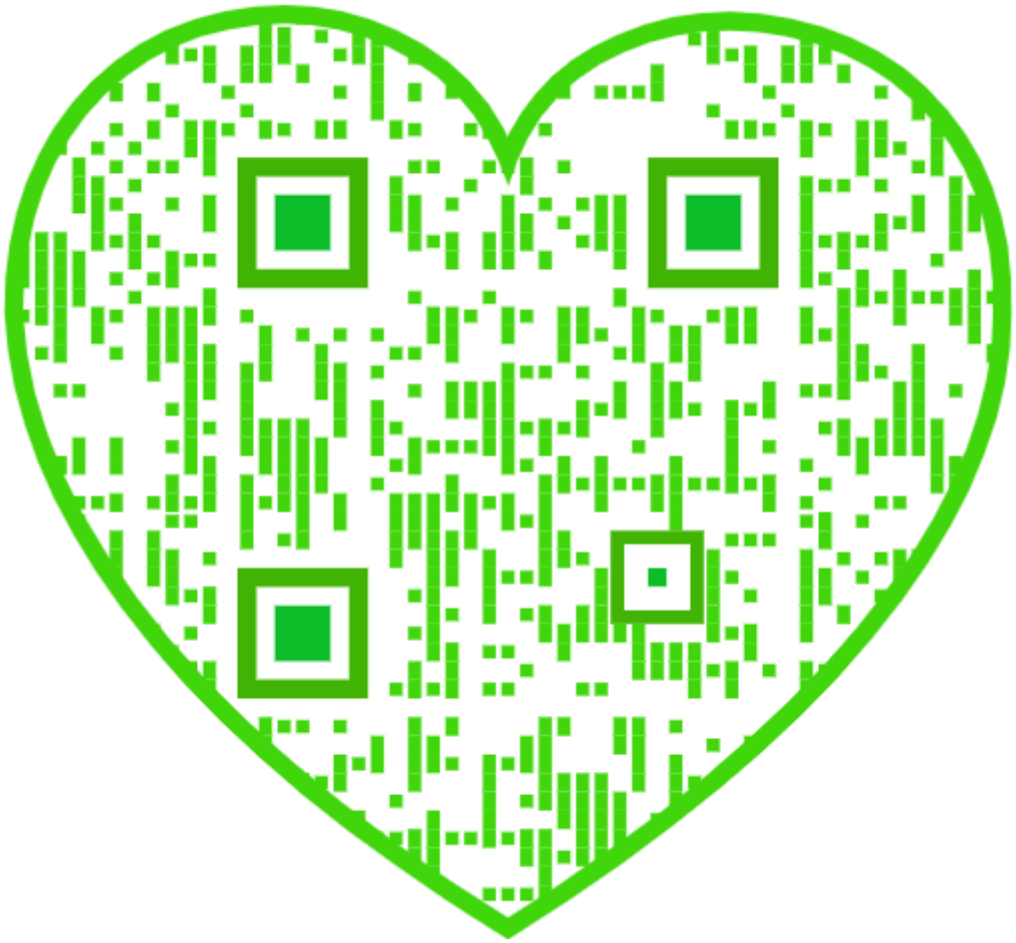

# MISCELLANEOUS.

### Prof. Porter and Aerial Navigation.

With an Atlas strength of mind Prof. Porter has labored for the past seven years to bring into practical operation a perfect system of aerial navigation. Many pilgrimages has he made, and many difficulties has he met and vanquished in pursuit of this grand object.—Although often discouraged he would never give it up so, but on he went with eye unquenched by the sunshine of prosperity, or dimmed by the clouds of adversity, towards the grand object of his desires. His ambition to soar has been like that of the eagle, proud bird of the sky. He labored some years in New York City, in order to bring his wonderful balloon, named the Revoloidal Spindle into public notice, and along with Mr. Robjohn, astonished our citizens in the Tabernacle one evening in 1849, by making a model of it sail through that building as graceful as a whale. One of these aerial machines was to start from New York for California in April 1849, but somehow or other, instead of getting up it always got down, and Prof. P., disgusted, we suppose, at the ingratitude or blindness of the New Yorkers, to the merits of his machine, pulled up stakes here, and pitched his tent in the metropolis—Washington. Since he has made that city his place of abode, we understand he has devoted himself to his great work—aerial navigation—with a constancy of purpose, and a zeal which should arrest the attention of all high-flyers. We now learn by the Washington papers that Prof. P. has again given occular demonstration of the practicability of aerial navigation, by the exhibition of an operating aeroport, 23 feet long, and furnished with a steam engine and a pair of propelling wheels, whereby the apparatus is propelled rapidly through the air in any required direction. The exhibition is favorably spoken of as being highly exciting and gratifying to those who witnessed it.

Last year he commenced the construction of an aeroport or flying-ship, 160 feet in length, and nearly completed it before the approach of winter compelled him to suspend operations. When this is finished he intends to construct another of much larger dimensions, and capable of carrying passengers at a speed of 100 miles per hour, the practicability of which he apparently demonstrates as clear as *mud* in his lectures, and in a small pamphlet, in which the principles and construction of the machine, and the mode of managing the same, are described; and he moreover contends and demonstrates that this mode of traveling will be much more safe than by railroads or steam vessels. This large aeroport is estimated to cost $15,000, and is to be owned in shares of $5 each. About six hundred of these shares (amounting to $3,000) it is said, have been taken and the money paid in, and, in order to secure the shareholders from any liabilities of assessments, or any responsibilities, Mr. Porter gives for each $5 a regular title deed, which entitles the holder thereof to draw a proportionate share of the profits that may accrue from said aeroport, payable quarterly.

Thus the security of stockholders, namely a certificate of $5 for each share is certainly an excellent plan of securing the issuers of stock against loss, but it does not clearly appear to us how it secures the purchasers of it. Nevertheless, the project is so grand and vast, it is enough to make mount Vesuvius burst out in fiery laughter. As of yore, Prof. P. has not yet given up the idea of traveling to California at the rate of 100 miles per hour, scaring the grizzly bear, and startling the deer on the Rocky Mountains. It is his intention when he builds his large aeroport, to run to California from Baltimore in 30 hours, and make two trips per week, carrying 200 passengers each trip. Won't there be great times then. When this wonderful aeroport of the professor is completed, light and intelligence will be diffused among the darkened nations; cannons will be sold for old iron, steamships for coal scuttles, and railway cars for cow pens.

There are 6,691 miles of railway in England, from which £44,8 of receipts per mile have been obtained during the last quarter.

### Accident to the North Star.

About 10 A. M., last Thursday morning, Commodore Vanderbilt's steam yacht, North Star, left the pier foot of Grand street, East River, on her pleasure trip for Europe, but as she cast off her cables, the tide, which was running out very rapidly, swung the ship out of her course, so that her stern struck with some force upon the pier below, at the foot of Jackson street. In clearing the pier she was again thrown out of her course by the tide, and in a moment after, struck upon the reef of rocks lying about 100 feet from the pier, where she lay until the high water floated her off. The steamboat Huguenot came alongside immediately, and took off all the guests without the occurrence of any further accident.

It was stated that the main cause of the accident, was the stupidity of the man at the helm, who, on the order being given by Commodore Vanderbilt to put the helm a port in order to carry the ship into the stream, turned it in a contrary direction, thus allowing the tide to carry the vessel aground, but this was not true—the pilot could not avoid the danger. In striking she keeled over on one side, and for a moment there appeared danger of her capsizing.

It is one of the most disgracetul things in connection with our harbor, that such rocks are suffered to exist in it.

On the next day she was put on the Dry Dock at the Navy Yard, and was found to be little injured. In four hours the copper was replaced, and she went to sea in the evening. Success to the North Star.

### New Method of Grafting Grape Vines.

The following is from the "Ohio Cultivator":—

"Saw off the vine an inch or so below the surface of the ground. Then with a gimlet or small auger, just the size of the graft, bore one or more holes perpendicularly or parallel with the grain, about two inches deep, in the top of the root sawn off, and into these insert the scions the full depth of the holes. Let the scions be of the last years growth, well ripened and about six inches in length, with a bud or eye at the top; they should be cut from the vine during the winter or early in the spring, before the sap gets in motion, and the operation should be performed before it is expected the sap will start, although it will usually succeed afterward if the top of the stock is well waxed. After inserting the scions, cover the wounds firmly with moist clay, up to the eye of the scions, and place a board so as to protect it from washing by rain till the leaves appear. This method is surer than cleft grafting.

### A Curious Relic.

Dr. Crone, of Yorkville, S. C., has recently procured for Dr. John McLean, of Lincoln Co., N. C., a specimen of feathers and a winding sheet taken from the body of a corpse, supposed to be that of an Indian girl, found in a sulphur cave in Middle Tennessee, many years ago. It was found in a cane coffin, with the legs cut off at the knees and placed on the breast. The body is in a perfect state of preservation; the flesh very tough and free from taste or smell, and perfectly hard; the feathers were used as an outside covering; the bark canvas was the second, and enveloped the deer-skins which covered the body.

### Progress of the Cholera.

In the last sitting of the Academy of Medicine, in Paris, Professor Jules Cloquet communicated a letter which he had received, from Teheran, from his nephew, who is physician to the Shah of Persia, in which he gives some interesting details on the subject of the cholera. He says:—"We are threatened with cholera this spring, and I am obliged to do the honors of the country to this disagreeable visitor. The malady in this instance follows a progress quite unusual. It broke out at Bussorah in 1851; it has already come up the course of the Tigris as far as Bagdad; from Bagdad, in crossing the Kurdistan, it directed its course towards the province of Azerbaidian. After having ravaged that country, particularly Tauris, the capital of it, it proceeds to the south and south-east, following the borders of the Caspian Sea, and it is stated that it has made its appearance at Cashin, which is only 22 leagues from Teheran. According to this itinerary, it is not probable that on this occasion it will direct its course towards Europe, and there is every reason to believe that, after having levied its quota on Persia, the malady will proceed to India, its native country, which it ought never to have quitted."

### Railroad Engines.

Zerah Colburn makes the following extraordinary statement in an article in the "Railway Times:"

"The average annual deterioration of American engines is from eight to twelve per cent. upon their first cost, while five cents per mile are required for repairs, so that generally our engines destroy themselves at the rate of $10 value per day when in full use This can be easily established by proofs."

Engines cost from $3,500 to $8,000. Taking the average cost at $5,000, and calculating that the engine is used 300 days in the year, the wear would amount to $3,000 per year. The Erie Railroad have 142 engines, and at this estimate their annual cost must be $426,000 allowing that they are all in use.

### The Crystal Palace.

We believe there may be found in this city a few individuals of ultra sanguine temperament, who expect that the Crystal Palace will be opened by about the celebration of the National Anniversary. We visited the skeleton of that building yesterday, and really if it comported with our strict views of high moral principle to risk a bet, we would venture one dollar to fifty that it will not be ready to receive the public before the first of August; and we have our own reasons for believing that the happy day will be still further postponed to the first of September. The delay, we suppose, is unavoidable, so we must possess our souls in patience.—[New York Daily Times.

### Cure for Toothache.

We know nothing of the safety or efficacy of the following recipe for toothache, which we find imputed to a practioner, in an eastern paper:—"Gum copal, when dissolved in chloroform, forms an excellent compound for stuffing the holes of decayed teeth. I have used it frequently, and the benefits my patients have derived from it have been truly astonishing. The application is simple and easy. I clean out the hole, and I moisten a little piece of cotton with the solution; I introduce this into the decayed part, and in every instance the relief has been almost instantaneous; the chloroform removes the pain, and the gum copal resists the action of the saliva; and as the application is so agreeable, those who labor under this dreadful malady would do well to make a trial of it."

### A Month of Calamity.

This has been a month of calamity.—Within three or four weeks there have been recorded in the pages of the public press the destruction of the steamship Independence in the Pacific, the Ocean Wave on the Lakes, and the Jenny Lind in California; the awful railroad calamities at Chicago and Norwalk; and now there is added the loss of the ship William and Mary at sea. By these six disasters not less than five hundred souls have been hurried into eternity; and in addition to these there have been minor accidents on railroads and steamboats, falling of buildings, &c., which would materially swell the fearful aggregate.

### Ship Race for Ten Thousand Dollars.

The owners of the ship "Sovereign of the Seas," of New York, having bantered the world for a race, W. H. Webb replies that he accepts the challenge, and is ready to bet the sum of ten thousand dollars on the ship "Young America" (the last of his construction), commanded by Captain Babcock—the trial to be made on the terms proposed, viz., from New York to San Francisco, both vessels loaded, and to sail together or within thirty days of each other.

The opening of the railroad from Savannah to Columbus, which unites the Savannah and Chattahoochee Rivers, was celebrated on Friday, May 20th.

### Improved Lithographic Press.

An improved press for lithographic printing has been invented by H. C. Spaulding, of Hartford, Ct. The object accomplished by the improvement consists in giving a uniform and forcible impression to all parts of the stone with the expenditure of but a very small amount of power. The arrangement of Mr. Spaulding for effecting this object is this:—a wood or metallic air-tight chamber or tub, containing water or other fluid, with its bottom or one side composed of india rubber or some other water-proof elastic or pliable material, is used to give the impression; said chamber being furnished with a tube and plunger, and the pliable bottom or side of the chamber serving as the tympan. By applying pressure to the plunger, an equal amount of pressure is transmitted by the water or fluid to every part of the tympan, and by using a small plunger an immense pressure may be obtained with a small expenditure of power. Measures have been taken to secure a patent.

### Loom for Weaving Plain and Figured Fabrics.

A great variety of improvements for looms have been illustrated and described in the Scientific American, and new devices are coming under our notice almost daily. Several very important improvements have lately been invented by James Greenhalgh, Jr., of Waterford, Mass.; the improvements relate to several parts of the loom, and are too extensive to describe without the aid of engravings. The parts upon which the improvements are made are those which relate to the harness motion and the method of hanging the heddles; there are also several improvements in the method of constructing and operating the jacks, by which the amount of labor is lessened, and the work performed more perfectly than by those ordinarily in use. The inventor has taken measures to secure a patent.

### New Drill and Countersinker.

Warren Lyon, of New York City, has taken measures to secure a patent for an improvement in hand drills; they are very simple in construction, cheap, and perfectably adjustable. The nature of this invention consists in having a conical or other shaped weight upon the arbor of the drill, for the purpose of giving the requisite pressure, and having a system of levers and a counterpoise connected to the upper part of the arbor, for the purpose of elevating and depressing it, and at the same time of adjusting the pressure given to the drill by the weight. The upper end of the arbor turns within the end of one of these levers, and to the other end is attached a second lever, which has an adjustable counterpoise connected to it by a stirrup, and a ratchet rod attached to it extending down by the side of a hook, by which the drill may be raised and kept in any desired position while not in operation. The support for the metal to be drilled may be of the form of those in common use.

### New Steam Boiler.

J. S. Underhill, of the city of New York, has taken measures to secure a patent for an improvement in boilers for steam engines. The object of this invention is for the purpose of obtaining a more complete heating surface by a peculiar arrangement of tubes and water spaces, and also for the purpose of providing means whereby the soot and ashes may be removed with more facility and ease than has heretofore been done. Mr. U. places a portion of the tubes vertically and others laterally within the boilers—his boilers having vertical sides and ends with an arched top, and is really a good arrangement.

There seems to be little room left for improvement in steam boilers, no one, however, can tell what may yet be done,—an age of improvement this, certainly.

### Daguerreotype Hat Crowns.

These specimens of art are daily finding some new position in which to exhibit their beauty and perfection. They are now placed in the tops or crowns of hats, and kept in that position by a very simple contrivance for the purpose. The daguerreotye tops will not be more expensive than the French paintings which are at present employed. This arrangement is the invention of Thomas Rafferty and Henry G. Leask, of New York City, who have taken measures to secure a patent for the improvement.

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### Foreign Scientific Memoranda.

Colored Signals.—Colored signals have for some time been used, upon French Railroads, as a means of acquainting the engineers of approaching trains with the state of the track, during the night. Each guardian has three bull's-eye lanterns, one white, one green, and one red. White is significantive of perfect security; the green and red are indicative of danger and the necessity of precaution. But it seems that this system will have to be abandoned. Many people are incapable of distinguishing one color from another, and accidents have positively happened, by the engineer's seeing the green light through the red, or vice versa, and taking the interposed and mingled colors for white.—Instead of holding up and looking out for "track loosened by rain," or "rails upheaved by the frost," he would count on "perfect security," and dash on into obstructions and devastation. This affection of the eye is denominated by physicians *chromatopseudopsii*; and the "Moniteur" says it is much more common than is generally supposed. Prevot affirms that one person in twenty has it, and Seebeck that fully five men in forty are afflicted with it. Prof. Thomson, of Glasgow, has for several years declared the employment of colored signals on railroads to be attended with great danger. Green and red are precisely the colors most likely to be mistaken the one for the other. The same journal mentions a person of its acquaintance who was commissioned by a lady to buy her a green silk at Lyons. On his return he brought her a red one, thinking that he had discharged his duty with extreme propriety. It says, too, that this incapacity to distinguish colors is frequent even in persons whose professions would seem to render great delicacy of eye necessary; and quotes four well-known painters, three surgeons, two paper-makers, two dyers, a shawl washer, a tailor, and a worker in enamel. Several employees on the Northern Railroad have been convicted of it. Gardeners are often obliged to squeeze an apple or pear to find out whether it is ripe. Its color is no guide. The "Moniteur" also knows a stationer who offers you white sealing-wax for red, and cites the case of a manufacturer of paper-hangings who could not tell red from pea-green, and who made so many mistakes that he had to go out of the business. In consideration of all which facts, the Directors of Railroad Companies in France are urged to hit upon a surer method of communication between the guards and the conductors.

That there are many persons who cannot distinguish one color from another, we have no doubt, but they cannot be numerous, and they must certainly have a knowledge of their own defects. We do not believe that there is a single painter or dyer so defective in distinguishing colors in the world—not one. It has never been our lot to become acquainted with a single person who could not distinguish colors; it is our opinion, therefore, that colored signals are perfectly safe.

Compressed Air Carriage.—The Paris *Presse* says that it has seen upon the Champs Elysees, a carriage containing two persons, proceed for twenty minutes, at the full speed of a horse, by means of a cylinder of compressed air, of so small a volume that you might put it in your pocket. The inventor thinks he has obtained a practicable plan of utilizing compressed air, and has discovered a means of compressing it at a merely nominal cost. A paper on this subject has been read to the Academy of Sciences. M. Julienne proposes to adapt the principle to carriages and street vehicles merely, to which it may be applied with great economy and perfect safety. With a small cylinder, a party may take an airing at the Bois de Boulogne at any rate of speed, from a walk up to a gallop.

Table Moving in Germany.—It seems that experiments upon the moving of tables, as practiced in the United States, are very common in Germany. The "Gazette d' Augsburg" was the first paper that called attention to the phenomenon, and described the manner of producing it. Dr. Loew, of Vienna, who seems to be a man of note, gives an explanation, by experiments upon a light wooden table—persons enough to surround it completely must place their hands upon it, and join them to those of their neighbors by the extremity of their little fingers. After a space of time, varying from half an hour to an hour and three-quarters, the persons surrounding the table feel a slight shock; the table seems to dilate and to crack, as if it were standing too near the fire; it then turns half round upon its axis, and starts off toward the north. A person may even withdraw from the chain and another take his place, without damaging the experiment, if it be quickly done; but everything is lost if a person not in the chain places his hand upon the table.

Dr. Loew explains this phenomenon, which he says he has seen produced time and again, by the negative and positive electricity contained in the left and right sides of the human body. When a circular chain thus formed of persons whose left side touches the right side of their neighbor, and vice versa, acts for a length of time upon a table or any other body, this body would undergo the same change as a bar of iron when placed in the current of induction from the magnet; that is, one of its sides is magnetized positively and the other negatively. The body thus becomes a magnet, and turns upon its axis, till its southern half points toward the pole, and then will continue to advance towards the north as long as its magnetized condition undergoes no modification.

Inspection of Boilers.—In France there has not been one explosion of a steam boiler for every hundred in our country, and it would be well to copy her plan of preventing such disasters. Every steam boiler in that country must be tested to three times the pressure it is intended to bear, and this test is repeated annually. Cylinders of steam engines are tested in the same manner.

Faraday on Lightning Conductors.—On the 22nd of last month (April,) Prof. Faraday delivered a lecture on electricity before the Royal Institution, London, in which he directed attention particularly to those conditions of electric force exhibited in the phenomena of conduction and insulation, and which is of no small interest to all our people, as it relates to lightning rods. He commenced by showing the difference between the conducting powers of metals—iron and copper—and the difference between the travel of heat and electricity through them. The charge of a Leyden jar was sent through a long wire suspended from the top of the theatre to show that no perceptible interval occurs in the transmission of electricity through such a length of wire; as proved by Mr. Wheatstone, electricity travels at the rate of 300,000 miles in a second. Many electricians suppose that there are conductors and non-conductors of electricity, but this is not altogether correct. The discovery of the conducting and non-conducting properties of the bodies exhibiting this difference were quite distinct, but there are no substances in nature that conduct electricity without offering resistance, whilst the most perfect of what are called *non-conductors*, transmit some portion of the electric fluid. Conduction and non-conduction resolves itself entirely into a question of degree. When a prime conductor of an electrical machine was touched with a glass rod, no sensible effect was produced; a walking stick discharged the conductor entirely; a small copper wire discharged electricity as fast as it was produced in the machine, whilst a dry lath of wood conducted only part of the fluid. By reducing the thickness of the lath its conducting power was diminished, but by shortening the said lath its conducting power was increased.

The resistance which the very best conductors offer to the passage of electricity, has an important practical bearing in reference to the efficacy of lightning rods. It is essential in the construction of lightning conductors that they should be of sufficient size to carry off the lightning to the earth. A French commission had decided that a rod of iron of seven-tenths of an inch square is sufficient. In England the lightning rods fitted to the light-houses were of copper, about one quarter of an inch thick. The capacity of copper to conduct electricity was seven times greater than that of iron, and yet in last January, although the Eddystone Light-house was protected with such a copper rod, it was much damaged with lightning. As a long rod offers more resistance to the passage of electricity than a short one, it is very evident that one which would be perfectly suitable for a house would not be so for a steeple; the higher the spire or house, the thicker should the conductor be for it.

Telegraph for Parliament.—Another application of scientific ingenuity serves to illustrate the various uses of electricity in a rather striking manner. The House of Commons has set up an electric telegraph of its own, connected, of course, with the telegraph offices in the Strand, by means of which the Honorable members will be able to communicate with their constituents, touching the divisions and debates, and the progress of nightly legislation in general. The convenience cuts both ways, and the electors on their part will be able to transmit significant hints to their Representatives of their wishes, and occasionally, perhaps, of their commands on any particular question, while a discussion is going on, so that no member will be able to plead ignorance of the feelings of those who sent him to St. Stephen's. A new electric clock, coupled with an apparatus on the electrical principle, for ringing thirty bells, notifying torpid or absent M. P.'s that a division is at hand, is also a fresh Parliamentary appurtenance.

Humboldt on Table Moving.—The "Silesian Gazette" publishes a letter by Alexander Von Humboldt, to a friend who had applied for his opinion upon the supposed magnetical phenomena of table moving, which has been described in several journals. The veteran physicist remarks that it is always easier to destroy a false theory, than an inaccurately apprehended fact. He then adverts to a long series of pseudo-scientific discoveries, which have been made and exploded in the course of his eighty four years' experience, and advises the table movers to "try their chaff upon some younger bird."

### [For the Scientific American.] Railroads---Their Improvements for Safe Travel.

The many sad accidents which are occurring, almost daily, in our country, on railways, demand that some efficient means may be put in operation to check the great sacrifice of human life on these roads, and the ruin of so much property. The railroad system is widely extending throughout our country, and except, in their plan and construction, we can insure safety to the passenger we shall only increasing the evil and trifling with human life. The fearful speed now attained on railroads adds to the risks now run by the passenger in case of meeting any obstruction, however slight, which would cause the wheel to fly the track. The exposed state of these roads makes them liable to injury, and the facility of producing a ruin is a strong temptation to the unprincipled highwayman. Before our railroad companies enter upon any new works of this kind, they should institute an inquiry whether there is any improved plan of railroad which combines safety of travel with economy of construction: any plan which would secure and insure the wheels from running off the rail under any degree of velocity given the train: any plan which would be free from the common accidents, including collisions, which now occur on railroads; that will do away with the necessity of road guards, signals, switches, and such-like attendance; and last, though not least, a plan which will not cost even a moiety of the sum now paid per mile on the present plan of railroads. In the name of a suffering community we wonld urge that these inquiries should be made, and if there is any practicable plan of railroads which promises this immunity from such evils, these companies are bound to avail themselves of it, and put an end to the sad record which now, almost daily blots the pages of our history. The undersigned can, with confidence, say that there is hope of such an exemption from these evils, by the consummation and the perfecting of a plan of railroad embracing all the requisites of safety to the traveller. The Pacific Railroad will be soon stretching its lengthened line across our country, and such security should be given its travel, that our people may reach its distant terminus in as many minutes as there are miles of distance. The locomotive engine which is to accomplish this desirable speed, is already perfected, and needs only the perfecting of the rail upon which it is to travel,—this, as has been said before, is near its accomplishment.

Robert Mills, Engineer and Architect.
Washington, D. C., 1853.

### Storm Pointer Camphor.

Messrs. Editors—Seeing an article in your paper of the 14th inst., on the Storm Pointer, I was reminded of one I made about eighteen years ago, under the direction of a sea captain who first saw one in use by a Frenchman, a passenger on board his vessel, and being so fully satisfied with the indications given by it, that he ever after carried one on shipboard, placing (as he said to me) more confidence in it than in the best barometer, from the fact that it had, in more than one instance, given earlier indications; and once in particular he prepared his vessel for a storm, while others near him, using the common barometer, had no indications by it of its approach. It was made of a tube of glass filled nearly full of a saturated solution of camphor in alcohol, the top of the tube being covered with porous leather or parchment, with pin holes made in it.

At the time of making the one I used, I could give the particular appearance of the camphor on the approach of wind or storm, it has now escaped my memory, but could be easily revived, or any person can make one and try for themselves. C. Leavitt, Jr.

Rockville, Conn., May 13, 1853.

[The objection which may be urged against the use of the above solution, is that the alcohol will soon evaporate through the porous piece of leather.

### Flying.

Messrs. Editors—In view of the many aerial projects which are proposed, I beg leave to offer the following suggestion:

I propose that some of our enterprising naturalists examine into the relation, existing between the weight and the volant strength of birds. By the volant strength of birds I mean, of course, that part of their power which is applied exclusively to their aerial propulsion. The proportion between this strength, and their weight, has never been ascertained, at least to my knowledge. Let this ratio be determined and we shall be in possession of an important, and, indeed, almost indispensable premise on which to base our reasonings in respect to aerial navigation. There is surely enough of mechanical science in the land to calculate, before-hand, the weight and power of any proposed flying ship, and to bring them to this test provided by nature.

It is evident to every one that if the ratio between the power and weight, of any machine, is less than the ratio between the power and weight of birds, such a machine must inevitably fail to sustain itself in the air; and that there can be no hope of success, unless this ratio is as great, or greater, in the one case than in the other. And it seems to me that a due apprehension of this fact, would put an end to so many baseless projects of aerial navigation, that we so frequently meet with now-a-days. Cannot some of our scientific friends, favor us with their views on this subject. A Subscriber.

[The above is a good suggestion; but to it we must necessarily add another, viz., the means of *sustaining* that power—the relation between the food which sustains the force of the fowl and that of a machine.—Ed.

### A Gigantic Steamship.

The following are said to be the dimensions of an iron steamer about to be built by Mr. Scott Russell, of London, for the Eastern Steam Navigation Company. She is to be 620 feet long, 100 feet beam, 6,000 horse power, and 12,000 tons burden. She is to be propelled by four paddles, and a screw. The horse power will be proportioned as follows: 2,000 for the screw, 2,000 for the mid-ship paddle-wheels, and 2,000 for the fore-paddle wheels.

Goods are arriving in this city daily from abroad for the Worlds' Fair.

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# NEW INVENTIONS.

### Improved Wagon.

Isaac Crandall, of Cherry Valley, N. Y., has made certain improvements in the construction of wagons, for which he has taken measures to secure a patent. His improvement will be understood by the following brief description. The invention relates to a novel method of arranging many of the parts of the common double wagon, and of making its upper reach elastic, so as to yield when when the front axle and tongue are moved out of a straight line with the direction in which the carriage is moving, so as to accommodate itself to the movement of the horse, and as soon as the horse is in motion on a line parallel with the lower reach, to throw the tongue and front axle, together with their attachment, in the proper position to be drawn in the direction of travel. This arrangement prevents the tongue from loosely playing from side to side, and thus very frequently striking the horse while drawing the cariage; the extra reach may, with convenience, be used upon carriages already constructed, and the injurious lateral motion of the tongue while the horse is drawing, thus prevented.

### New Safety Lamp.

The number of accidents occasioned by the use of fluid lamps has induced a variety of inventions to prevent the explosions which have heretofore been by far too common an occurrence. A most effectual method for accomplishing this object has been invented by C. J. Conway, of New York City; for his invention Mr. C. forms a reservoir at the base of the lamp, into which the fluid is poured without bringing the fluid can near the burning lamp. This reservoir is then closed and the fluid conveyed by a small air-tight tube up to a chamber or small reservoir near the top of the lamp, from which there is no external opening except for the wicks. The upper end of the tube is bent in the form of a syphon with the curved portion placed in the top of the smaller chamber, so that the fluid cannot pass from the upper to the lower reservoir, but may pass from the latter to the former by simply inverting the lamp. The receiving reservoir being quite large, the upper reservoir may be filled several times without any new supply by the same process of inverting the lamp. The arrangement forms a very cheap, safe, and convenient article, and is also quite ornamental. Gustave Sellin, No. 27 Bowery, is the agent for manufacturing and selling, of whom further information may be obtained.

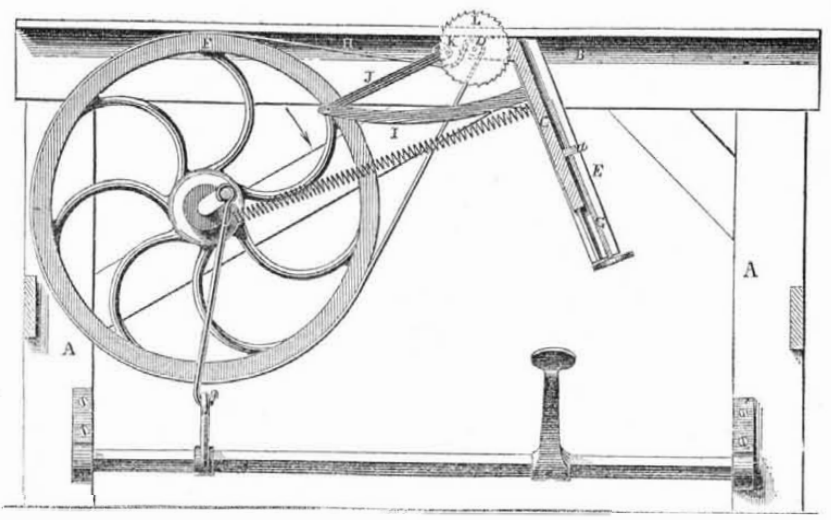
### Grain Separators.

An improvement in grain separators has been invented by John Bean, of Hudson, Mich. The improvement is made upon the common wind or fanning mill, whereby the coarse foreign materials are extracted from the grain before being subjected to the blast of the fan wheel, thus the grain is better prepared for the action of the air and screen sieve. The means by which this object is effected is by placing in the centre of the upper sieve a forked guide, with its point towards the hopper containing the chaff and grain, and two spouts, one near each of the outer corners of the upper sieve, and placing beneath the sievea thin metallic plate corresponding in size with the size of the sieve, so as to prevent the current of air striking the grain until it has passed from the upper sieve and plate to the screen sieve, thus effectually cleaning the grain, first by silting and separating, and afterwards by thoroughly expelling the dust and finer particles by the air blast. The inventor has taken measures to secure his improvement by patent.

### Improved Mill for Grinding.

An improvement in mills for grinding has been invented by T.& D.A. Humphrey, of Pine Grove, Pa. The novelty consists in an arrangement by which the ground grain is separated into various qualities. The fine or superfine flour is carried to the packer to be deposited in barrels, another portion is conveyed to the bolt to be re-bolted, and the coarser portion back to the eye of the mill stone to be re-ground. In this manner the various qualities are separated as desired. The means adopted to effect this result are briefly as follows:—a series of conveyor reels or propellers and spouts are used, the propellers are three horizontal shafts with spiral wings, like the threads of a screw, some turned to the right and some to the left, according to the direction in which it is desired to convey the flour, &c. The main or middle propeller shaft is placed immediately and longitudinally beneath the bolt, and spouts from this propeller convey the ground grain to other propellers, by which it is conveyed to the place desired, thus saving the labor of separating by hand, and at the same time performing the work more readily and correctly. The inventor has taken measures to secure his invention by patent.

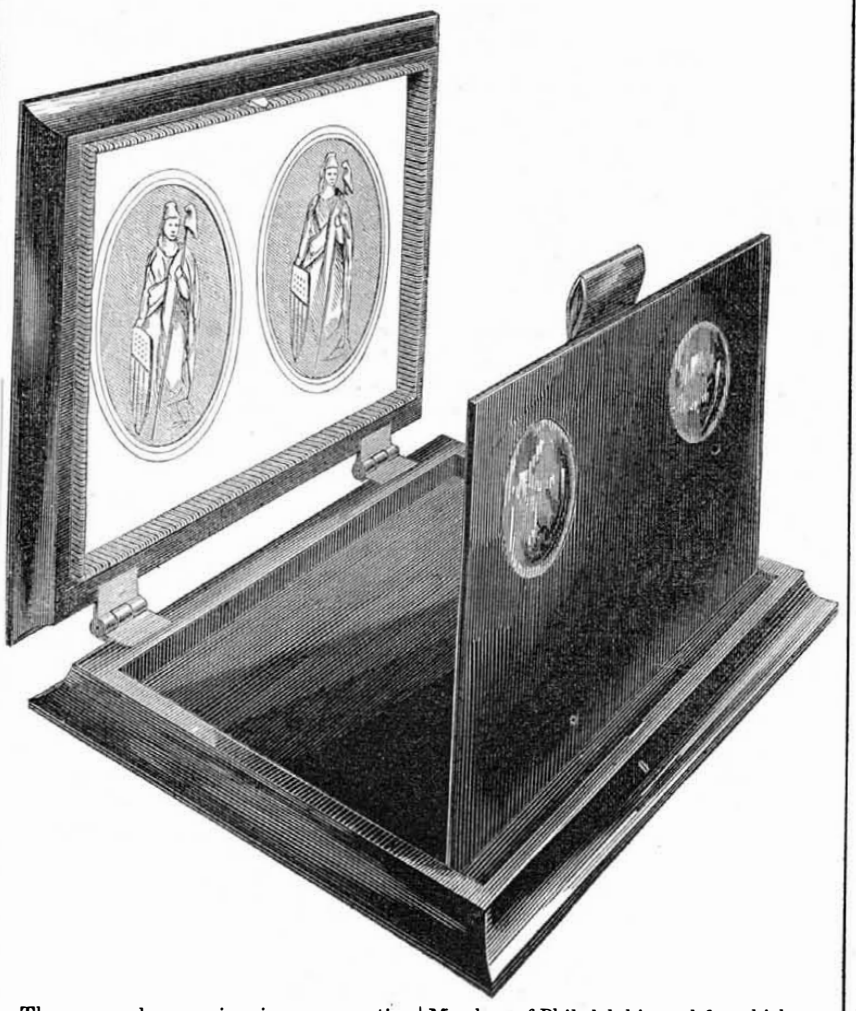
## IMPROVED CIRCULAR SAW.



The annexed engraving represents a new method of hanging circular saws, invented by D. H. Harris, of Salem, Mass., and assigned to Messrs. Shannon & Kimball, No. 243 Water street, New York City. By this arrangement the saw may be elevated and depressed at pleasure, without altering the length of the belt, still giving the belt the requisite amount of tension by means of a friction pulley.

A represents the frame upon which the bed or platform, B, is secured; L is the circular saw upon the shaft, D, which is hung in suitable bearings in the slide frame, C. This slide frame works in ways or guides formed upon the edges of the plate, F, and may be raised or depressed by simply turning the thumb screw, G, which passes through *a*, attached to the frame, C. F is a band wheel hung in bearings in the frame, A, to which power may be communicated in any suitable manner to drive it in the direction of the arrow. The belt, H, from this wheel extends over a stationary pulley upon the shaft, D, the friction pulley resting upon the upper portion of this belt, as represented. I are two arms projecting from the slide frame, C, in the extremities of which the swing frame, J, is hung, which extends nearly to the shaft, D, and forms bearings for the friction pulley, K; the object of this arrangement is, that the friction pulley may rest upon the upper portion of the band which has the least tension when the saw is in operation. There is much work done with circular saws, which requires an adjustment of the saw, such as rabbeting, halving, mitering, and sawing shoulders and tenons; for these purposes this saw is well adapted, as it supersedes the necessity of raising and lowering the frame which supports the plank, and also makes the operation of the saw more effectual. Measures have been taken to secure a patent. Further information may be obtained by letters addressed to the assignees.

## MASCHER'S STEREOSCOPE.



The annexed engraving is a perspective view of a most beautiful invention relating to the daguerreotype art, invented by J. F. Mascher, of Philadelphia, and for which a patent was granted on the 8th of last March. The improvement consists in converting the daguerreotype case into a stereoscope, by a very simple arrangement of having a supplementary lid or flap, in which are two ordinary lenses.

Two daguerreotype pictures are taken at an angle of about 25° or 30°, on the right and left of the centre, and placed as shown in the case. In the supplementary lid or flap, are placed two glasses of short focal distance, like those of an opera glass. By looking through these, the person whose likeness is taken, stands out solid and life-like, no more resembling a common picture, than a statue does an oil painting. These cases are made so that the pictures are placed in the right position, and the lenses set at the proper focal distance to produce binocular vision.

We believe it was Prof. Wheatstone, of London, who first made the disovery of the stereoscope, which was afterwards greatly improved by Sir David Brewster, and by him first applied to produce binocular vision with daguerreotype pictures. But the stereoscope of Brewster is a separate instrument from the daguerreotype case, is much larger and costs five or six dollars, while Mr. Mascher has applied that beautiful and wonderful principle of optics to the daguerreotype case itself, and here it is introduced to our American readers as one of the most delightful and pleasing improvements connected with the fine arts.

To show the benefit of having a good paper devoted to improvements in the arts, we would state that this excellent invention, but for the Scientific American, would perhaps not have been made. On page 266, Vol. 7, Scientific American, we described the principle of binocular vision, and the operations of the stereoscope. This set the inventive mind of Mr. Mascher on the right track, and on page 322, same Vol., we published his letter, stating that from the description he had read in our columns, he had produced the first solid daguerreotype pictures in Philadelphia (and we believe in the United States.)—Shortly after that he converted the common daguerreotype case into a stereoscope as now presented in the accompanying engraving.

In a short period, no person, we believe, will have a likeness taken by a daguerreotypist but stereoscopically. As these cases are no larger than the old kind, who would have a flat picture to look at, when the solid life-like likeness can thus be produced. No one can have the least idea of the beauty of this invention, until he sees such pictures with his eyes. By this improvement, husbands will, when thousands of miles separate, be enabled to see their wives standing before them in breathing beauty, wives their husbands, and lovers their sweethearts. It is a noble and elevating art, which perpetuates to posterity the looks of those we love or revere; this improvement will enable us to look upon the loved and respected when far away, or when they are in the tomb; it will enable us to see them as they once were with us, and prosterity will know how they and ourselves looked without trusting to the flattery or faults of a limner's pencil.

More information may be obtained by letter addressed to Mr. Mascher, 408 North 2nd street, Philadelphia.

### New Railroad Car Wheel.

Archibald C. Ketchum, of New York City, has invented a new railroad car wheel, by which all parts of the wheel, which are subjected to friction upon their becoming worn, can be taken out and replaced by others. The spokes, hub, and rim of the wheel are formed of separate parts, the hub and rim being of cast-iron, and the spokes of wrought iron. Dovetailed recesses or slots are cut laterally in the inside of the rim and outside of the hub, for the reception of the spokes, which are formed to fit very accurately. The spokes are then rivetted to the rim, and a heavy ring is shrunk upon the hub to prevent the spokes from moving from their position in the slots. The rim is chilled to obtain the requisite degree of hardness for the face and flange, and taking the whole together it forms a most substantial as well as durable wheel. Few wheels constructed in separate parts have the requisite amount of strength to work safely, but this is so put together that it forms a very strong wheel. Measures have been taken by the inventor to secure a patent.

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Scientific American

NEW-YORK, MAY 28, 1853.

### Encouragement to New Inventions.

Among many of our monied business men, and too frequently among officers of Railroad Companies, there is a want of information in regard to many valuable improvements and inventions, which might be adopted by them to advantage, and perhaps equally as much to the advantage of others. It is a duty which Railroad Companies owe to our community to adopt such means as shall insure safety and convenience, as well as speed and profit. They should seek for those inventions which tend to avert danger and enable them to carry out their plans for the safe conducting of trains of cars to the best advantage—a neglect to do so is a crime, and should be regarded as such by the community. By many officers of railroads, a disposition to treat inventors and inventions with perfect indifference, is notorious. Presidents and Directors on some of our railroads will hardly pause to notice an improvement of any kind.

We have been told of an incident which may be properly related in this connection:—A friend called upon the President of one of the Eastern Railroads, with the model of an invention of his own, connected with one of the most important departments of railroad management. The President was absent, but the chief clerk very politely volunteered the information that, if present, he would have no time to look at models of any kind. With Yankee perseverence, however, the model was again brought, and the clerk's information proving but too true, it was taken away again. The President and his friends learning, however, that the inventor was a man of some influence, changed the usual routine of proceeding, by sending an apology for neglect, and a request that he should again submit his model for examination. This being done, all the parties who examined it were led to express their approbation of the improvement suggested. But the act speaks—it tells us that inventions or improvements, however valuable to the community, receive no notice from these officials, unless they are presented by some of the lords of the soil—some of the monied few. The poor inventor, however meritorious, however ingenious his contrivance for insuring safety or convenience to those who are travelling with such rapid speed—is repulsed without even a passing notice. When large dividends are the cherished aim of Railroad Companies, and officers are appointed whose sole object appears to be to carry out these ends, it can hardly be supposed that new suggestions or new improvements, which have safety or convenience for their object, without a special regard to profit, could meet with a very courteous reception. These are generally the men who suppose that few additional improvements in railroad engineering will ever be made; from such, inventors can expect little encouragement, and they should not look for it from that source.

The idea is prevalent in many places that inventors are but speculators, and perhaps the President above referred to has imbibed the same sentiment, if so he should be apprised that this is not the case. 'Tis true, worthless inventions sometimes fall into the hands of speculators who care little for them but to make the most from their purchase; but inventors, as a class of men, are benevolent, honest-hearted men,—men who feel grateful for a kind reception, and who appreciate a benevolent act from those who have the ability and the spirit to test their improvements, and encourage those that are worthy of encouragement. These apparent improvements may be encouraged in a variety of ways, and frequently at a very trifling expense. It is not unfrequently the case that an important improvement may be tested in a short time by the aid of an engine or car that has been laid aside for ordinary use. Railroad Companies often have the means at hand to render assistance in this manner, which might ultimately benefit themselves as well as the world at large. Experience proves that mechanical and scientific discoveries benefit all—they are a blessing to the poor as well as to the rich.

### The Impertinence and Ingratitude of Scribblers.

Centrifugal Force and Horace Greeley.—Ingratitude is a vile sin, but alas, it is a very prevalent one. Our constant readers will remember that we published engravings of the static pressure—centrifugal force engine on page 339, Vol. 6, Scientific American. The description of this engine was presented in the name of Stephen Pearl Andrews, who, to his own satisfaction, proved that there was a wonderful principle in the said engine, whereby a force was obtained which came from nothing, cost nothing, and increased by the square as the velocity of the machine was doubled. A certificate from a professor of mathematics accompanied such description, as a mark of high authority we suppose, like a scarlet feather stuck in the nose of an Indian Princess. We exposed the fallacy of the whole scheme, on page 341 said volume, but philosopher Andrews, not content with our expose of the ignorance of its advocates, must needs reply to our strictures; this we allowed him to do on page 363, said volume, and only allowed ourselves one column to reply to his three. He made matters still worse, and exhibited the most profound ignorance of calculating the dynamic power of machines. Not yet content because we did not allow him more room in our columns, he went and found plenty of room in the "N.Y.Tribune," to publish all of his own remarks that had appeared in the Scientific American, and many incorrect gratuitous assertions beside. At that time for at least three months, we think, two papers in this city contained two and three columns of falsehoods and personal abuse of us every week, all of which we heeded not, as we have an abiding faith that right and honesty will always triumph at last, and iniquity meet its just reward. Two years have passed away since then; one of the said papers, although of seven years' standing, has been laid in its coffin, the other has been sold to a new proprietor and is in a very sickly condition. The "Tribune" of the 17th inst. contains an expression of gratitude from Stephen Pearl Andrews, which must be very consoling for the abuse which Mr. Greeley allowed that gentleman to shower upon us through his paper.

A discussion on *Love, Marriage*, and *Divorce*, was held in the "Tribune" between Henry James (an able writer,) Horace Greeley, and Stephen Pearl Andrews, and because Mr. Greeley acted towards him as we did, with respect to the use of the "Tribune's" columns, he has published the whole discussion in a pamphlet, with his own additions, and in his preface says:—

"Horace Greeley is not a philosopher—the farthest from it in the world———he has no grasp———never sees down into the centre of things———has no logical mind———Mr. Greeley is a bigot———Mr. Greeley is unfair, tricky, and mean———he is practically dishonest in an eminent degree," &c., &c.

Horace Greeley says about him:—

"Our only reply to all this is very fairly exhibited in his writings, and especially in this pamphlet. The clear-sighted reader will find him clever, acute, dialectically agile and logically sharp, and, so far as he reasons from his understanding rather than his baser appetites, well worth perusing and heeding.—This pamphlet does much credit to his intellect, but at the expense of his moral nature."

It would be out of place in us to make any comments on the qualifications of Horace Greely as an editor; they could not at least be disparaging respecting his ability, but he is evidently no judge of what constitutes *a logician*, when he considers Mr. Andrews a sharp one; his articles on the static pressure engine—that great *humbug* of which he was an advocate—ought to convince Mr. Greeley of this. The "Tribune" contained a great many articles on the new centrifugal force, by which some persons, we think, were led to take stock in the Static Pressure Association. Many of our daily papers, and we blame the "Tribune" greatly for this, flatter new projects, like the static pressure engine, the Paine Light, Hot Air Power, and other *humbugs*, by which means many of our people are thereby deceived.

The "Centrifugal Force" philosophers built one engine, which exhibited so much power, coming from nothing and costing nothing, that it has not been heard from since. Probably Mr. Greeley considers that the proprietor of such a wonderful machine must be "acute and agile."

### Railroads in Cities.

In many places there seems to be a strong prejudice against having railroads pass through streets. We do not wonder why such a feeling should exist when steam power is employed to draw the cars, but we think such a prejudice is exceedingly unreasonable against having tracks laid in streets when the drawing power is the same as that which is used to draw numerous lines of omnibuses. The objections which can be urged against locomotives running in streets are many; such as the smoke of the wood employed for fuel; the blast, and the general speed at which they have been and are now run in all those cities through which railroads are laid. Locomotive power would certainly never do for New York City unless through a perfectly secluded street for that purpose, and in such a case who could or should find fault?

We have never seen a good argument advanced against railway tracks in cities, yet when the Common Council of Williamsburgh—a young city adjacent to New York—granted the privelege to a company of laying down a track in that place, they were compelled to recede from their position by a universal indignation meeting of the citizens.—It would not indeed be just to run a railroad through a street against the wish of all the owners of property in that street, but the owners of property may be wrong in their opposition, and if they are, it is the duty of those who think so to try and convince them of their error, rather than cram an improvement down their throats. Let us present a few arguments in favor of railroads in cities on which the cars are drawn by horses.

1st. Railroad cars are certainly handsomer than omnibuses, they can at least be made so, and therefore they present a better appearance in going through a street.

2nd. The track is straight, and no fears need be entertained by a pedestrian crossing the street that they will swerve from their path, like an omnibus; they go straight on and neither turn to the right hand nor to the left, so that there is no danger but in crossing the rails, whereas the danger from omnibuses is manifest over the whole breadth of the street.

3rd. Railroad cars make less noise than omnibuses, and thereby are much preferable either for streets full of shops, or those composed of private residences.

4th. One horse on a railroad can draw as much as three on the best pavements, and thus as a certain saving to any city, the rails have greatly the advantage in avoiding the expense of tear and wear of pavements, and outlay for animal feed. This saving is effected by obviating the great resistance and friction of pavements by the substitution of rails. Where this can be done and is not, a preference being in favor of clumsy omnibuses, a person is forcibly reminded of those dark times when people went to mill with a stone in one end of the bag to balance the grain in the other, to help the poor animal that carried the bag. The arguments we have presented in favor of railroads in cities as substitutes for omnibuses running over pavements, we think are incontrovertible, we know the last one is. Instead of injuring the value of property, a good city railroad running through a street should raise its value, especially if the rails are substituted for one or two lines of omnibuses.

### Speed of the Norwalk Train.

In the first despatches sent to this city respecting the speed of the train which ran into the draw at Norwalk, and by which so many of our fellow beings lost their lives, it was stated that the locomotive passed over the gap, which is 60 feet wide, and struck the abutment a short distance only, below the horizontal line. Since that time the locomotive has been raised and it had never struck the abutment at all, consequently it did not leap over the gap. A question has arisen, then, as to the speed of the train, as some said it was going 40, others 25, and others only 15 miles per hour. It is difficult to tell at what rate it was going, but if it had been running at the rate of 47·15+ miles per hour it would have struck the middle abutment 16 feet below its top. Bodies fall by the attraction of gravity at the rate of 16 feet the first second, and a train running at the rate of 47·15+ miles per hour, has a velocity of 60 feet per second, which is the width of the draw. As the abutment is stated to be about 40 feet high, and as the engine did not strike it, the probability is, that the train was running at the rate of about 20 miles per hour.

### Pennsylvania Polytechnic College.

A new college has been incorporated by the Legislature of Pennsylvania, whose objects meet with our hearty approbation, and we hope and trust that it may soon be firmly established. It is designed to teach mathematics and civil engineering; mechanical philosophy and the principles of machines; metallurgy, and every branch of chemistry, together with mining, engineering, mineralogy and geology. The Trustees of this Institution have not asked for State aid to establish and support it, they rely upon the generous assistance of the people of Pennsylvania in particular, and if they do not come to its aid they will be recreant to their own interests. The State of Pennsylvania is rich in mines and minerals, and a thorough knowledge of all that relates to subjects connected with engineering, minerals, and chemistry, should be taught her youth.

It is expected that the college will open in the month of September next with a full faculty; a well supplied analyical laboratory, sections and models of mines and machinery, a geological and mineralogical cabinet, field operations, and architectural and mechanical drawing, to afford ample facilities for thorough and practical instruction. Students will be enabled to pursue one or more studies for a year, term, or less period, and after examination, will be granted certificates of capacity accordingly. Candidates for Degrees will be examined on all the branches, but may pursue the studies a longer or shorter time, according to industry and ability.

Particular information about fees, &c., may be obtained by young men who would desire to attend said college, or by fathers who may desire to send their sons there, by communications addressed to John McIntyre, Esq., Walnut street, above Sixth, Philadelphia.

### Commissioner of Patents.

The Hon. Chas. Mason has entered upon his duties as Commissioner of Patents, and we hope he will adopt the earliest possible measures to facilitate the examination of applications which have largely accumulated in the Office within the past year. Inventors, as a general thing, cannot afford to remain so long deprived of protection or of a decision respecting the novelty of their inventions. Theirs as well as the interests of the public, demand a larger examining force: no completed application ought to remain in the Office over two months. From what we can learn of Mr. Mason, we believe he possesses peculiar fitness for an office of such magnitude, and confidently predict for him a faithful, liberal, and comprehensive administration.

### Non-Protecting Lightning Rods.

The house of Nathan Frye, at Salem, was struck by lightning on the 30th April, and much injured. What is remarkable about this case is the fact that it was supposed this house was thoroughly protected by two large rods, very properly put up and tipped with gold.—[Exchange.

[We have been informed that these large rods terminated in charcoal, and ran up part of the way, after being carried down some distance. They were, therefore, not correctly arranged. Lightning rods should always terminate in moist ground, a well, or cistern.

Jesse Hutchinson, of the Hutchinson Family of Singers, died at Cincinnati last week, at a Water Cure establishment in that city. He was on his way home from California, where he had been sick for a long time.

It is stated that a proposition for the annexation of the Sandwich Islands, is now before the administration at Washington.

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*Reported Officially for the Scientific American*

## LIST OF PATENT CLAIMS

**Issued from the United States Patent Office**

FOR THE WEEK ENDING MAY 17, 1853

PENDULUM LEVELS—By T. A. Chandler, of Rockford, Ill.: I claim the method of supporting the angular journals of the arch of a pendulum indicator in turning and self-adjusting bearings, of similar form to the angular journals, as set forth.

VIOLINS—By Moses Coburn, of Savannah, Ga.: I claim the apertures in the sides, instead of in the top, and for producing the effect set forth.

VERTICAL PIANOS—By Edwin Fobes, of Boston, Mass.: I claim the arrangement of the straining pins, with their axes, vertical, or nearly so, and parallel, or nearly so, to the general plane of the strings, and to stand above the iron frame, as set forth, the string of each hitch pin having guide rollers applied to it, as set forth, my improvement enabling me to obtain sundry important advantages in the construction and tuning the piccolo pianoforte.

I also claim extending the sounding-board upwards, above the bridge, and in rear of the bridge plate in the treble, and so as to be capable of vibrating, in rear and above said bridge plate, as set forth.

UMBRELLAS AND PARASOLS—By Samuel Fox, of Sheffield, Eng. Patented in England, April 6, 1852: I do not claim the bending or corrugating a metallic plate, or bar, for the purpose of imparting strength thereto. But I claim making umbrellas and parasols with ribs and stretchers of plate steel, bent in the trough-like shape, as specified, in combination with eyes and connections, applied essentially as described, whereby they are rendered comparatively much lighter than, and still posse-s all the requisite strength of those made with solid or round rods of metal, in the ordinary way, and at the same time the formation of the eyes and connections is facilitated.

SOFA BEDSTEADS—By L. L. Gilliland & J. R. Wagoner, of Dayton, Ohio: I claim the hinged front board, so arranged that by the turning over the seat, to convert the apparatus from a sofa into a bed, the front board shall turn down to prevent it from forming a hard ridge, under the sacking, which would be uncomfortable to lie on, and when the seat is turned back again, to re-convert the bed into a sofa, the front board shall be lifted up again by the act of turning the seat back into the proper position to support the sacking of the seat.

Also, the arrangement of the head and foot boards so that the act of shutting up the bed will depress them, and opening it out will elevate them again, as set forth.

The arrangement of the turning seat of the sofa, and the sackings of the bed and seat, in such a manner that, by the turning of the seat to form the bed, the sacking of the latter shall be stretched, and by the turning up again of the seat, to reform the sofa, the sacking of the latter shall be stretched, as set forth.

CALENDAR CLOCKS—By J. H. H. Hawes, of Ithaca, N. Y.: I claim causing a calendar clock to supply its own changes, for the irregularities in the length of the month, and showing on its dials the exact and no fractional parts of a day, week, or month, by means of the combination of the wheels, having thirty-one divisions, both of which run together, and independently of each other, at intervals, on the same arbor, and the lifting pieces for supplying the necessary changes in the length of the months, the whole being operated by the hook piece, as described.

Also, in combinalion, the wheel of seven parts, working, spring-tight, with the wheel and the catch piece, so that the two wheels may move together and independently of each other, for the purpose of allowing the day of the month indicator to run, during the time that the change is taking place from the end of a short month, to the beginning of the next month, while the day of the week indicator passes from one day to another, in regular succession, as described.

COOKING STOVES—By Matthaus Heim, of Cincinnati, Ohio: I claim the open bottomed space or chamber, behind the fire encircled at the sides and top, by flue, and closed at the ends, by shifting or movable doors, as described, constituting an accessible and well ventilated arrangement for roasting purposes.

CUTTING WOODEN SCREWS—By A H. Longley, of Lebanon, Ind.: I claim giving an equal progressive to the cutting tools, in combination with a differential rotary motion, for the purpose of cutting the screws at the same time the hole is bored or the tenon is made as set forth.

UPHOLSTERING FURNITURE—By Frederick Mathesius, of New York City: I claim covering the seats or other parts of upholstered furniture, or other articles and things, by means and with the aid of elastic ligaments or springs attached to the edges of the covering, and to the framework of the article covered, in such manner that the outer or fancy covering, however much used or pressed down, upon being relieved from such pressure, will resume and retain an even and smooth surface, using for that purpose india rubber, springs, or any other elastic material, which will produce the desired or intended effect.

SEEDING HOES—By J. A. Pease, of New York City: I claim the combination and arrangement of a double bladed hoe, with seed box and drop, as described, for the purpose of planting separate kernels of corn at equal distances apart.

POCKET COMBS—By Wm. J. Thorn, of Westbrook, Me.: I claim the manufacture of pocket combs, with semicircular joints in combination with strips overlapping them, as set forth.

CASTORS FOR FURNITURE—By Wm. W. Wade, of Springfield, Mass.: I claim the arrangement of the right-hand screw on the spindle, in combination with or respect to the arrangement of the left-hand screw, into the socket of the socket piece, and to the bearing surfaces of the said parts, whereby the spindle is not only preserved in the socket piece, by the two screws, but allowed freely to rotate, when its bearihg surface is in contact with the bearing surface of the socket, as described.

GRADUATED CUTTERS FOR CLOTH AND OTHER SUBSTANCES—By H. D. Walcott, of Boston, Mass.: I claim, in its connection with the cutting knife, the improvement of making the bed to move or rotate transversely, in combination with the surface of it, which acts in conjunction with the knife, of variable length or lengths, in order, by moving or turning the bed around under the knife, different lengths of cut may be produced, as set forth.

Also, the improvement of combiaing with the knife and tubular cutter, and a rotary shaft or cylinder, placed under them, the two triangular or trapezoidal beds or surfaces, arranged on the shaft or cylinder, as described, whereby a cut or button may be made of any desirable length either with or without a hole at one end, as stated.

CLEANSING AND COOLING BLOCK DIES IN RIVET MACHINES—By D. L. Weatherhead, of Philadelphia, Pa.: I claim is clearing cinders, scales and other obstructions, from a socket die, made in a solid block, for the purpose of heading rivets, by forcing in at the closed end of the die, a stream of water, that washes out the cinders, &c., every time a rivet is discharged; the inner end of the socket of the die being closed so that the pressure of the head of water, is rendered available, for forcing obstructions out of the die, as set forth.

LIME KILNS—By S. J. Seely, of New York City: I claim the process described of calcining limestone in a kiln, by the aid of furnaces and an artificial draught of air, through the furnaces and the kiln, maintained by a mechanical blower.

I also claim the combination of a suction blower at the top of the kiln, and a forcing blower at the bottom thereof, as set forth.

Also, the method of regulating the production of steam, to generate the power for the engine, in proportion to the duty required of it, by setting the steam blower in the same furnace that supplies the heat, for calcining the limestone, as described.

TRACK CLEARERS TO HARVESTERS—By Wm. F. Ketchum (assignor to R. L. Howard), of Buffalo, N. Y.: I claim the scraper or raking board, constructed as described, and combined with the rake piece at an angle less than a right a rigle, as set forth.

CORRUGATED PLATES FOR STEAM BOILERS, &c By Richard Montgomery (assignor to Elizabeth Montgomery), of New York City: I claim the corrugated metal plate, as described, with flat margins of greater thickness than its middle.

AIR ENGINES—By J. A. Woodbury, of Winchester, Mass., Joshua Merrill, of Boston, Mass., & Geo. Patten, of Charlestown, Mass.: We claim the mode specified of using air as a motive power, said mode consisting in the employment of a receiver, in which is to be highly compressed, heated, and maintained at or about a uniform pressure, a suitable working cylinder and piston with the ordinary appendages, an air pump, or pumps, worked by the ordinary appendages, an air pump, or pumps, worked by the engine for supplying the receiver, when the same are connected or combined with suitable devices, as set forth, for cutting off and working the air expansively, and according to the degree of compression of the air, as set forth.

We also claim, in combination with such an engine, the device for regulating the pressure of the air in the receiver, and economizing the power of the engine, said device consisting of the weighted bar, entering the receiver through a stuffing box, and connected, at its opposite end, with the stop cocks attached to the chambers of the air pumps, as described, intending to use any known means for accomplishing the two-fold purpose of regulating the pressure of air in the receiver, and opening the pump chambers ta the atmosphere so that the pump shall be relieved from unnecessary labor.

SEED PLANTERS—By Wm. Cressler, of Shippensburg, Pa.: I claim, in combination with the adjustable tubes, the seeding wheel, with its flange and partition, for adjusting, receiving, and carrying the grain and other material to be sown with it, around the opening, whence it is conveyed to the ground.

### Events of the Week.

"WHAT IS DOING TO THE ERICSSON.—This fine ship lays at her dock foot of North Eighth st., Williamsburgh, preparing to undergo extensive alterations and improvements in her machinery. A temporary shed has been constructed near her dock, wherein to stow her machinery, most of which is to be taken out, in order to facilitate the improvements. In removing the machinery it will be necessary to displace a portion of her deck.—Workmen were yesterday engaged in taking out the ashes and brick from her furnaces, &c. To-day it is expected this job will be completed, when the work of removing the machinery will be prosecuted with earnestness. Several months yet must necessarily elapse before she will be ready for her destined voyage to Europe."

This extract is taken from the New York Daily Times of the 18th inst. When we have presented any information respecting new repairs or alterations making in the hot air ship, we have quoted the same from some paper (like the above) which had previously proclaimed *the complete* success of the Ericsson. It is not that we are not as well, or even better informed about what is going on in the Ericsson, than any paper in our city, that we make extracts like the above from our daily papers, but because we wish to corroborate all we have said about the failure of this ship, by giving the testimony of such journals as most lauded the new power at first, and who made bold to assert that "the days of steam were ended."

We cannottell what may be affected by alterations of which we know nothing; we have spoken about what we know has taken place. Nothing would have given us greater pleasure than to have been able to say, "hot air is superior to steam power," as we welcome every *improvement*. We have received a number of letters from various places, in which Prof. Rainy has lectured on the Ericsson, informing us that on every occasion he took the liberty to misrepresent us. We keep a record of his sayings and bide the proper time to use them. We cannot believe that the gentlemen connected with the Ericsson have anything to do with his *itinerancy*, and they are therefore not responsible for his statements.

TO PREVENT INCRUSTATIONS IN BOILERS.—To persons having the care of steam engines the following from the "Lawrenceburg Register," may be valuable:—"Mr. Ira Hill has informed us that he has accidentally made a valuable discovery, by which the deposition of lime upon steam boilers may be obviated. Two or three shovels of saw-dust are thrown into the boiler; after which process he states he never had any difficulty from lime, although using water strongly impregnated with it. He has always found the inside of his boiler as smooth as if just oiled. Whether the lime attaches itself to the floating particles of saw-dust, instead of the boiler, or whether the tanic acid in the oak saw-dust forms a salt with the lime, which will not attach itself to iron, remains to be explained. The saw-dust was placed in the boiler for the purpose of stopping a leak. The experiment is cheap and easily tried.

[Saw-dust is not a new discovery for the prevention of incrustations in steam boilers.—In 1846 a patent was obtained for the use of mahogany saw dust to prevent incrustations in boilers; exhausted tan bark and dye woods have also been used for the same purpose.—Blocks and chips of oak wood have also been used, and our constant readers are perfectly familiar with these facts, as *saw-dust* is described on page 397, Vol. 3, Scientific American, as being applied for this purpose. If Mr. Hill will refer to said page he will find this mentioned, but the discovery may be new to him.

A NEW PROPELLER.—A beautiful propeller named the Vequero, has been built in this city for the coast trade of Cuba. The hull was built and modelled by George Steers, the designer of the yacht America. It is of unsurpassed symmetry and beauty. Her total length is 151 feet; depth of hold 10 feet; breadth of beam, 24 feet 4 inches; and is driven by a pair of oscillating engines; cylinders, 26 inches diameter; length of stroke, 28 inches; diameter of propeller, 8 feet; pitch, 10 and 11 feet; geared, 2½ to 1; draft, 9 feet consumption of fuel, 5 tons per twenty-four hours; burthen, 340 tons, carpenter's measurement. The engines, by S. H. and E. Farron are of great efficiency and perfection.

This vessel on her trial trip last week, made 16 miles per hour with her sails set.

### Cincinnati Steam Fire Engine.

The annexed letter is from the inventor of the Cincinnati Steam Fire Engine, to Charles Cist, Esq., of "Cist's Advertiser," who has kindly furnished us with the original copy, which will interest our readers, as all rejoice in the progress of invention, and welcome every one that is new and useful:

"About twelve years ago I commenced making improvements in steam generators, and in the experiments have made various advancements towards a safe and speedy, as well as an economical mode of generating steam. These efforts have at last been embodied, with most of the improvements made in the time above stated, in the construction of a steam generator which was tried and crowned with entire success. I made the first one practically tested, with my own hands, in the establishment of Miles Greenwood, Esq., having obtained from him the use of a smith's forge and materials; I proceeded to work, and in a short time finished the generator; it was then put in connection with a six inch diameter steam cylinder, two feet stroke, and an old pump of a condemned fire engine belonging to the city; the whole thus thrown together, and by the assistance of Mr. Bray, the City Fire Engineer, and A. B. Lattu, was mounted on a wooden frame on wheels. A day was set for the trial, which was made in presence of many members of the City Council and citizens, numbering probably three thousand.

It was universally agreed, that from the time the fire was lighted until the steam was made from cold water, and the engine and pump at work lifting water from the cistern and pushing it through three hundred and fifty feet of hose, projecting over one hundred feet, from an inch nozzle, to where it struck the ground, occupied just five minutes. This trial was made on the 2nd of March, 1852.

On the first day of January, 1853, the firm of Lattu, Shawk & Co. had completed the steam fire engine now in the use of the city; and on the same day the trial was made, and was reported by the committee that 'in five minutes after the application of the match, there was steam sufficient to work the "doctor," which supplies the boilers with water; in ten, the engines were working finely, and in fifteen minutes the apparatus was at the cistern, by the intersection of Broadway an Second street. In four minutes more, making in all nineteen minutes, from firing and starting the, attachments were all made, and the apparatus lifting through two suctions, and throwing two handsome streams through inch nozzles. It variously threw from one to four streams; by concentrating six streams through a 1½ inch nozzle, it threw water to the distance of 224 feet. From one to three streams were thrown in various directions from the centre of Broadway over the Broadway Hotel and other four story buildings.'

After the engine was put into the hands of the city, an opportunity offered to test its full power, and show the amount of water it could lift from a cistern and discharge from the engine in a given time.

The cellar of an engine house was by an overflow of the street filled with water, the side were twenty-two feet apart in the clear, and the rear and front walls were seventy-two feet in the clear. The water line was marked when the engine was set to work and the time taken; in the space of one hour and ten minutes the water was lowered five feet, showing that twenty-six barrels were discharged per minute during the time of working.

At a recent fire on sycamore street the engine went eight squares, dropped the suctions, into the cistern, attached, and laid out six lines of hose six hundred feet each supplying at that distance, four hand engines, and throwing two streams on the fire, the time consumed from the time the engine started, until the water was thrown upon the fire, was twelve and a half minutes.

At a trial on Ninth street the engine lifted the water from the cistern and projected it, through an inch and three quarters nozzle, to the distance of two hundred and thirty-eight feet from the nozzle, to where it fell upon the ground, not measuring the spray.

The engine has been to all the fires since it has been in the hands of the city, and at all of them, has elected the universal approbation of the citizens.

There is now no more doubt of its usefulness and practicability, for putting out fires than there is doubt about the navigation of the Mississippi river against the current, or of the Atlantic Ocean by steam vessels.

There has been much effort necessary in the introduction of this machine, it required an acquaintance by experience, in its use, which alone could be obtained by time and a number of trials at fires; difficulty of training hands to manage it well, was a great tax on the patience of the City Fire Engineer, R. G. Bray, who also had the prejudices and much of the opposition of the fire department, to overcome which could only be done by gentle means, as violent opposition or arbitrary dictation would only have created more violence on the part of those opposed; the course pursued was the right one, as the result has shown.

The whole fire department has been re-organized and put in successful operation without any serious consequences, and brings with it order and unanimity of action.

ABEL SHAWK.

Cincinnati, Ohio, May 1st, 1853."

The "Charleston Standard" thinks that Mrs. Singleton, now living in the Williamsburgh District, in that State, is the oldest woman in the world; she is now in the 131st year of her age. Her mental faculties are still unimpaired.

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## TO CORRESPONDENTS.

J. H., of Me.—You will not invalidate your claims to a patent by introducing your invention now. We have enrolled your name upon our subscription list.

H. M., of Ind.—Such engravings of your invention as will answer our purpose to publish in the Scientific American, will cost you $10 We can get up suitable engravings for handbills, etc., for $6.

A. W. F. F., of Va.—One pound of coke will evaporate 12 lbs. of water. but only 9 lbs. of water are evaporated in a locomotive boiler. It is surely possible to get a better per centage from the fuel.

H. G. B., of Ind.—Dalton has evaporated 10 lbs. of water by one of charcoal ; 12 lbs. of water can be evaporated by one of coke ; he tested the quality of different kinds of fuel.

J. F. H., of E. G.—Your shoulder brace is very good; the yellow coloring property of the Barbary bark has been long known. Be careful in your experiments with potassium and sodium ; amorphous phosphorus is the best thing yet discovered for making the matches.

E. W. S , of Pa.—Your plan for increasing the draught of steamboats will answer very well, it is the same as that used for locomotives, except yours has an adjustable mouth, which so far as we know is patentable as you apply it.

R. M., of D. C.—Yours will receive attention next week.

A F. W., of Pa —We cannot refer you to any work for working drawings of paper machinery as used at present in the manufacture. The Cornish double beat is excellent.

B. F. R., of Pa.—You will not get half the power of your water from a Barker's mill; get a re-action wheel. The Barker mill, however, may do all your work, and you perhaps can build it yourself; if you knew the quantity of water discharged we could tell the power, not otherwise.

M. K., of N. Y.—Prof. Page's engine has been patented in Europe, but not here ; a battery has but one negative and one positive pole, your idea about *three* we cannot understand. The bar can certainly be divided into three separate parts; but you cannot get them to work as you propose ; they will all move together in one direction.

C. S , of Mass.—There is always danger of life from lightning passing into telegraph offices, if the conductors are not sufficient to carry off the discharge to the ground. We have not received minute information about the telegraph office at Buffalo Some telegraph instruments have been destroyed. It is possible for operators to be vigilant at all times. Your suggested improvement can be easily tried, and you should do so.

S. D., of Ct.—No patent could be secured for a clothes pin made as represented in your sketch.

A. C. C., of Ky.—Your letter, containing $3 for expense on model, is received.

J. W. M., of N. H.—We have carefully examined the sketch of your alleged improvement in ship's rudders ; it contains nothing new or patentable.

G. L. J., of Ohio—It is impossible for us to form an opinion respecting the novelty of your inventien without a sketch and proper description of it. You could easily construct and send us a model which we advise you to do.

M. & C., of Cincinnati—We shall examine your communication of the 18th, and will write you soon.

W. W., of Pa.—We certainly think there is no doubt about your getting a patent, but what could you do with it. It has reference to no interest in this country, therefore a patent would be valueless.

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Money received on account of Patent Office business for the week ending Saturday, May 31 :—

B. & W., of Ct., $30 ; F. G. W., of N. Y., $300 ; S. & McK., of N. Y., $55 ; J. C., of N. Y., $27 ; W. G. M., of N. Y., $30 ; J. E. A., of N. Y., $15 ; A. D. G., of N. Y., $30 ; D. McM., of ——, $10 ; C. B., of Mass., $30 ; I. Z. A. W., of Pa., $100 ; T. R., of N. Y., $40 ; H. C., of N. Y., $30 ; W. S., of N. Y., $45 ; S. & K., of N. Y., $67 ; J. G., Jr., of N. Y., $84 ; W. C., of Ga , $21.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday May 21 :—

M. B. F., of N. Y. ; M. & S , of N. Y. ; I. C., of N. Y. ; J. R., of Mich. ; M. & T., of N. H. ; A. C. K., of N. Y. (2 cases.)

### A Chapter of Suggestions, &c.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, provided they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engraving executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post office is located.

PATENT CLAIMS—Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office—stating the name of the patentee, and enclosing one dollar as fee for copying

# ADVERTISEMENTS.

## American and Foreign Patent Agency

**IMPORTANT TO INVENTORS.**—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

**GARDINER'S PATENT MAGNETIC GOLD** Washer, Amalgamator and Separator.—This is the most perfect machine for Gold Mining that has been invented ; it performs the operation of washing the earth or pulverized quartz rock, amalgamating and magnetic separation of black sand or oxyde of iron, all at one movement, saving every particle of gold dust, however minute. With this machine two men can perform as much work per day as ten by any other process, and save all the gold A full explanation of its operation will be given by the manufacturer. The public are invited to examine. Price $250. Iron Retorts at wholesale and retail.

NORTON & GARDINER,
37tf 47 Dey street, N. Y.

**TO PATENTEES AND OTHERS**—A man of energy, indefatagable perseverance and good address, is open to devote his whole time upon commission to anything likely to be very remunerative. Address "Industry," at W. H. McDonald's Advertising House, 102 Nassau street, N. Y. 1*

**WANTED**—A man as manager or chief superintendent in an iron manufacturing establishment in this State. Address "Iron," box 80 New York Post Office. 1*

**TO SHIP CARPENTERS,** HOUSE CARPENters, and Machinists—A respectable young man, 17 years of age, wishes to apprentice himself to either of the above trades ; he can be highly recommended, and give the most respectable city reference. Address JAMES LONERGAN, 34 Henry st. Willing to go to the country. 1*

**SAND PAPER, GLUE**—"Excelsior" Sand and Emery Papers, "Abbott's" Manilla Sand, and Match Papers, Emery Cloth, Emery, Emery Grit, Pumice Stone ground and in lump, of very superior quality ; also Grue of Upton's, Cooper's, and all other brands, in quantities to suit purchasers, at the manufacturers' lowest prices, for sale by WILLIAM B. PARSONS, 290 Pearl st, (corner Beekman) N. Y. 37 3*

**PATENT HYDRANTS AND COCKS**—Bartholomew's Patent Self-acting Double and Single Hydrants and Cocks are in extensive use and much approved of, are strong, durable, not likely to get out of order, always shut when not in use, not like ly to freeze, avoid waste of water, do not burst pipe. The hydrants are cheaply repaired without digging up ; double hydrants supply two lots and sixty tenants. The cocks are adapted for water closets, require no care in using ; always shut, being self-stopping, give a good supply; the double valve cock avoids the expense and space of cistern, and gives a uniform supply each time used. One service pipe will supply twenty, do not freeze nor overflow, and make the cheapest and best job. Plumbers only supplied at the factory, 84 Marion st, N. Y. City. All work warranted. 35 4*

**SPOKE MACHINES, SPOKE MACHINES**—The best and most perfect machine now in use, designed expressly for turning spokes of all sizes, is the one invented by Jenkins & Knight, and patented in January last. The Machine is capable of turning 200 spokes in an hour, and finishes the spoke including the shoulder. The subscribers, who are now the sole owners of the patent, are prepared to receive applications for machines or territorial rights.

M. SCHOMMAKER & J. M. COOPER,
35 5* Kingston, N. Y.

**NEW WORKS ON CIVIL ENGINEERING**—The Field Practice of Laying out Circular Curves for Railroads : by John C. Trautwine, C. E.; second edition, in pocket-book form. A New and Rapid Method of Calculating the Cubic Contents of Excavations and embankments, by the aid of Diagrams : by John C. Trautwine, C. E., with 10 copper-plates. Price $1 each ; postage on the Curves, 5 cents, and on the Excavations and Embankments, 8 cents. The postage may be remitted or not, as the Post Office does not require pre-payment. For sale by Wm. HAMILTON, Hall of the Franklin Institute, Phila. 35 3m

**CLOCKS FOR CHURCHES,** COURT HOUSES AND OTHER PUBLIC BUILDINGS, Time-Pieces for Session and Vestry Rooms Hotels, Rail-Joads etc.; Regulators for astronomical purposes, Jewellers, and others, when the most perfect time is desired. The improvements introduced by the subscribers, enable them to warrant an accuracy of time-keeping, unequalled (so far as they can learn) in Europe or America. Glass dials, for illuminating and other kinds, furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island.

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—[Scientific American. 19 13eow

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25 20* (16e3w)

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CHARLES W. COPELAND,
29 13* Consulting Engineer, 64 Broadway.

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34 4* Patentees and Proprietors.

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25tf Agent A. T. Company.

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34 4*

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# SCIENTIFIC MUSEUM.

### Anointing with Oil a Cure and Preventive of Disease.

The Scriptures speak of anointing the sick with oil, and throughout the whole of the Sacred Volume there is abundant evidence to show that oil was much used for the person by outward application. The employment of cod liver oil as a remedy for consumption has been a favorite panacea for twelve or fourteen years past, by thousands of eminent physicians, and there is plenty of testimony to prove that its virtues have not been overrated, but it has always been taken internally. Recent researches made by Dr. Simpson, of Edinburgh, the first applier of chloroform as an anesthetic agent, go far to prove that when oil is applied to the outside of the person it acts both as a curative and preventive of disease, and there is therefore some prospect of the ancient Oriental practice of oil-anointing being revived.

Having heard that none of the workers in the woolen factories of a neighboring town were attacked with cholera while it visited that place, and that consumption was not known among them, he paid a visit to the place (Galashiels), and by personal inquiry found his hear-say statements corroborated. He also learned that weakly children were frequently placed in such factories for the recovery of their health, which was usually effected. He then made inquiries respecting the health of the workers in woolen factories in a number of other places, and found the same immunity from disease to prevail among them, hence he came to the conclusion that the cause of this was the great amount of oil which is used in such factories—so great a quantity, indeed, that the clothes of the workers soon become saturated with it. In cotton factories the workers were found to be no more free from infection than other people, and he therefore now firmly believes that anointing with oil is an excellent thing for consumptive people. Cod liver oil is supposed to be the best because it is the strongest and only for its loathsome taste he believes it would be more abundantly used.

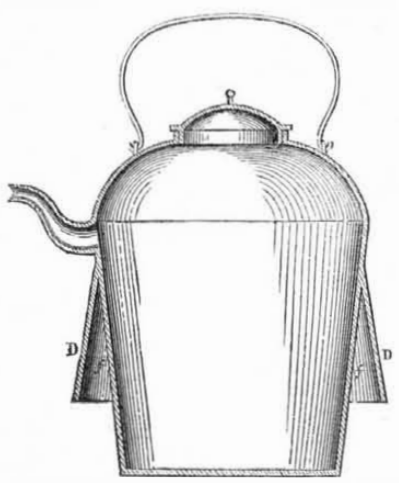
It is our opinion that sweet oil, and by this we mean nothing but *pure fresh olive oil*, is the best which can be used for such purposes. The ancient iron Romans used a great deal of oil, and we have no doubt but a more abundant use of it as an ointment, with frequent bathing, would be a great benefit to weakly persons, and tend greatly to render more vigorous the strong. We believe, however, that most of the oil sold under the name of olive oil in our cities, is not the genuine article.

We regret exceedingly that so little is said about this beautiful oil in the work of Dr. Pierce, of Cambridge, Mass., on the "Examinations of Drugs, Medicines, and Chemicals."

### Chemical Testimony in Cases of Poisoning.

M. Orfila, in a capital case for poisoning in France, took occasion to represent to the court the reason why experts could not reply to the question so often put to them, as to whether a sufficient quantity of poison to cause death had been administered, and the danger, in reference to the suppression of crime, the insisting upon such a question gave rise to. The chemist may only be able to detect the thousandth, or the twenty-thousandth part that has been administered, when the poison has been evacuated, and the discharges have not been preserved. If all the poison has been thus expelled he may not be able to detect even a trace, and yet, although in the one case what he has detected has been insufficient to cause death, and in the other he has found none at all, so that the jury may pronounce that no poisoning has occurred, yet has the person died of such poisoning. To ascertain the whole amount of poison that remains in the body, the entire frame would have to be submitted to analysis, which is clearly impracticable; while calculations of the quantity existing in the whole body from that which has been obtained from a part, would give rise to the greatest errors, inasmuch as the poison is not equally distributed over the whole frame, some portions of this absorbing and retaining much more of it than others. Different processes also employed by the same hand afford very different quantities, as does the same process performed by chemists of different degrees of expertness. The French law, too, does not require any decision on this point, as it punishes the attempt to poison by any substance that may cause death—this applying not to the proportion employed, but to the substance used.

### Improvement in making Kettles.




The annexed engraving is a vertical section of an improvement in kettles, invented by J. W. Hoard, of Providence, R. I., who has taken measures to secure a patent for the same. The improvement relates to making the kettle in such a manner that the heat, while the kettle is on the stove or furnace, will be applied to nearly the whole of the outside of the water. As kettles are commonly constructed, the heat is applied to only a small of the outside. Above the bottom, D, is a flange cast on a kettle of hollow ware, brazed on a copper kettle, or soldered to a tin kettle. The kettle otherwise is the same as any in use. The space, *f*, is hollow and open, so as to let the heat of the fire pass up between the flange, D, and the outside of the kettle containing water. If the flange, D, is soldered, as in a tin kettle, the water will have to be kept at the horizontal line above the spout, but if it is of hollow ware (cast-iron) it need not be above the apex of the conical flange. If this kettle is placed on a stove opening, which is of a larger diameter than the bottom, it will readily be seen how the heat will pass up and circulate round a great outer portion of that part of the kettle containing the water, so as to boil the vessel much sooner. When such a kettle is placed on an open furnace, the same effect is produced, as the heat from the charcoal fire will be compressed, as it were, around the portion of the kettle containing the water. The flange, D, may be cast on a stove to effect the same object; this embraces the same principle, but is not shown in the engraving.

More information respecting this improvement may be obtained by letter addressed to Mr. Hoard, at Providence.

### Fermentation of Citric Acid.

The following extract from the "Chemical Gazette," by J. Personne, will serve to throw some light on the question at issue between Dr. Montague and J. Downs, which was discussed in our columns, respecting the quick ferments employed for bread, &c.

"The manufacturers of citric acid have long known the difficulty of keeping citrate of lime without its undergoing a change, but the nature of the products of this decomposition have hitherto been unknown. It was known merely that citrate of lime, kept for a certain length of time, would no longer furnish citric acid, and people were satisfied with saying that it was transformed into carbonic acid, or rather carbonate of lime. It is, however, difficult to rest upon this hypothesis, if we consider the formula of citric acid; the spontaneous decomposition of tartar, observed by MM. Noellner and Nickles, whilst augmenting the doubt as to our knowledge on this subject, serves also to attach a certain interest to the study of this decomposition.

If, after saturating clarified lemon-juice with chalk, the paste of citrate of lime is put into a flask surmounted by a tube fitted for collecting gases, a disengagement of gas will be perceived in a day or two, when the operation is carried on at a temperature of 86° to 95° Fah., and this continues until the transformation of the citrate is completed. When crude juice is employed in place of clarified, the decomposition proceeds more rapidly, as is shown by the more speedy appearance of the gases.

### The Culture of Sea Kale.

Why the culture of the *crambe maritima*—this delicious vegetable should have been so long neglected, we do not know, but from the frequency with which it is met in the New York markets for two years past, it seems that its value is better appreciated now than it was a few years ago. The following directions for its cultivation will be of use, we believe, to many of our readers:—

The best soil for the successful production of sea kale is a rich deep sandy loam, though ordinary garden soils, if mixed with a good proportion of sand and well manured, will answer the purpose. Stiff or wet soils should be thoroughly prepared, by trenching to the depth of from two to two and a half feet and thoroughly mixing with good compost manure, thereby rendering top dressing sufficient for after culture, and saving the roots from disturbance.

Sea kale may be raised by seed, root-cuttings, or off-sets; but the seed is by far the most preferable. Sow in April or May, thinly in drills, three or four feet apart and two inches deep, ultimately thinning out to fifteen or twenty inches in the rows; which, in order to insure against injury the first winter, should not be done until the plants are one year old. In the fall the ground must be thoroughly cleaned from weeds, and the surface well stirred, either with a two pronged hoe or still better, with a fork, to the depth of four or five inches; after which a covering of fresh stable dung six inches in depth should be laid on, and left so until spring, when the rows should be dressed just before the plant comes through the ground, as follows, viz: after raking off the rough part of the covering, point-in with a fork the short part of it, taking particular care not to wound the roots; at the same time scatter a little earth upon the crowns of the plants.

In inland places salt may be used to advantage as an invigorator. The third year after sowing, it will be fit for use; and to prepare it for the table, blanching must be attended to as follows: As soon as the leaves appear above the ground a few inches, they should be earthed up and large flower-pots inverted over them, taking care to exclude light by stopping the hole in the bottom of the pot, and then to guard against sudden changes in the weather, cover the pots entirely with soil. When the sprouts have sprung up to the height of from eight to twelve inches, they are fit for use, and should be cut off with a knife without injuring the crown of the root; after which they may be prepared for the table in the same manner as asparagus.

In case pots cannot be had, other methods may be resorted to, such as earthing up, as the plants advance, once in four or five days, or by hooping over the beds or rows, and covering with mats; but if possible, the pots are decidedly preferable, and will repay the trouble or expense of procuring them. In blanching without pots, sand is sometimes recommended for earthing up; but it is difficult to clean the sand thoroughly out of it.

Throughout Great Britain and Ireland, sea kale is very extensiuely used; some think it not inferior to asparagus, others prefer it in soup to any other method of consuming it. They however, sow the seed early in the spring, and transplant in the month of May, as we do with cabbages. They take off the lower sprouts on the stock as it grows up, and use them in soup when tender, but not after the month of July, until the early frost which improves instead of injuring them. It is a hardy vegetable and may be kept in the garden all winter, and used as it is wanted. The treatment of it to blanch it, is quite an improvement—a gardeners discovery, which is well worthy of attention.

### Properties of Charcoal.

Among the many properties of charcoal may be mentioned its power of destroying smell, taste, and color; and as a proof of its possessing the first quality, if it be rubbed over putrid meat, the smell will be destroyed. If a piece of charcoal be thrown into putrid water, the putrid taste or flavor will be destroyed, and the water be rendered completely fresh. Sailors are aware of this; for when water is bad at sea, they are in the habit of throwing pieces of burnt biscuits into it to purify it. Color is materially influenced by charcoal, and in numbers of instances in a very irregular way. If you take a dirty black syrup and filter it through burnt charcoal, the color will be removed. The charcoal of animal matter appears to be the best for this purpose. You may learn the influence of charcoal in destroying colors by filtering a bottle of port wine through it; in the filtration it will lose a great portion of this color and become tawny; repeat the process two or three times, and you have destroyed it altogether.

A syphon for dairymen is now in use in Scotland, by means of which the milk is drawn away from the cream instead of skimming the cream off the milk.

### LITERARY NOTICES.

POETRY OF THE VEGETABLE WORLD—Being a popular exposition of the science of Botany and its relations to man; by M. J. Schleiden, M. D., Professor of Botany in the University of Jena; edited by Alphonso Wood, M. A., author of "The Class Book of Botany," etc., is a new work, just published by Moore, Anderson, Wilstach & Keys, Cincinnati, O. and Newman & Ivison, New York City. It contains nearly 400 pages, with several neatly executed lithographic plates. The work is interspersed with a great variety of incidents and curious facts designed to render examinations in Botany a pleasant pastime instead of an irksome study. The work is written in the form of essays, and is really a work of interest and utility to the general reader, as well as to the botanist and florist; it is of a somewhat novel character, and will no doubt meet with great favor by those who take an interest in this class of investigations.

THE WATER CURE JOURNAL—For May, No. 5, published by Fowlers & Wells, 131 Nassau st, N. Y., is received. Each number appears more spirited and sanguine than its predecessor of the success of the system it so ably advocates. If the directions contained in this journal were followed there would doubtless be far less disease than we now see. It is replete with that interest and ability which characterize all their publications. If the system they advocate be really true, certainly no family should be without it, as it would save many a physician's bill, and perhaps many a feeble constitution from destruction.

THE AMERICAN PHRENOLOGICAL JOURNAL—For May, published at the same place, is also a work of interest and useful instruction: each number is illustrated with engravings of eminent personages, with a description of their distinguishing traits of character; it is devoted to mental science, and is also, like the Water Cure Journal, conducted in an able and efficient manner.

THE NEW ENGLANDER—For May; published by F. W. Northrop, New Haven, Conn., contains an excellent article on "Fashionable Religion," and another on the "Influence of Great Men," each of which is worth the price of the work.

American Polytechnic Journal for May, just received, is an excellent number.

MECHANICS

**Manufacturers and Inventors.**

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